## 6.7 EFFECT OF VOLCANIC DEBRIS ON STRATOSPHERIC ION CONDUCTIVITY

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In this paper we report the reduction of stratospheric ion conductivities in the altitude range of 20 - 27 km attributable to the aerosols injected into the stratosphere by the eruption of volcano Nevado Del Ruiz on November 13, 1985. Three balloon experiments were conducted from Hyderabad, India (17.5°N, 78.6°E) carrying a Langmuir probe payload for measuring stratospheric ion conductivities. The first flight took place about 9 months before the volcanic eruption, the second 3 weeks after the eruption and the third about a year later. Lidar observations from Japan, Hawaii, and Europe reported detection of aerosol layers in the 18 -25 km altitude range attributable to the Nevado Del Ruiz volcanic eruption. A comparison of the conductivity profiles shows that the reduction of ion conductivities is: 57.3% at 20 km and 31% at 25 km. A year after the eruption, conductivities at all heights tended to recover.

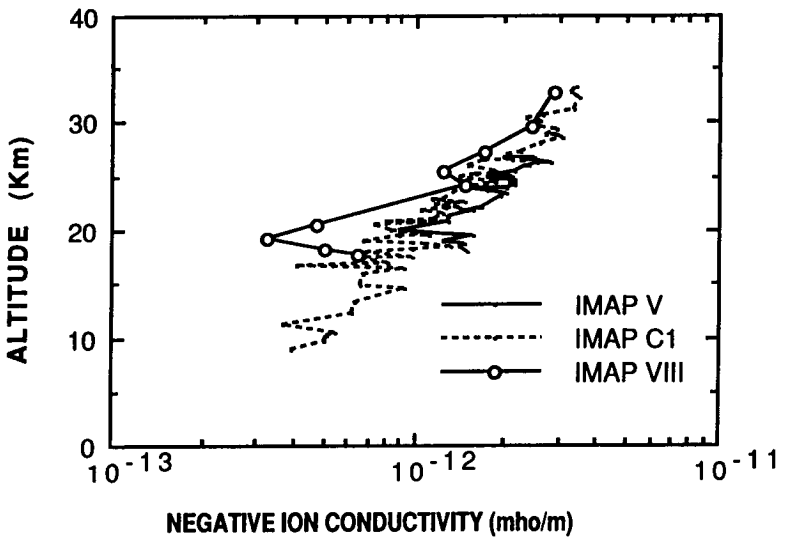


Figure 1. We report the reduction of stratospheric ion conductivities in the altitude range of 20-27 km attributable to the sulfurous material injected into the stratosphere by the eruption of volcano Nevado Del Ruiz on November 13, 1985. Three balloon experiments were conducted from Hyderabad, India (17.5°N, 78.6°E) carrying an electrostatic probe payload for measuring stratospheric ion conductivities. The first flight (IMAP-V) took place about 9 months before the volcanic eruption, the second (IMAP-VIII) about 3 weeks after the eruption and the third (IMAP-C1) about a year later. Lidar observations from Japan, Hawaii, and Europe reported detection of aerosol layers in the 18-25 km altitude range attributable to the Nevado Del Ruiz volcanic eruption. A comparison of the conductivities profiles shows that the reduction of ion conductivities is: 57.3% at 20 km and 31% at 25 km. A year after the eruption, conductivities at all heights tended to recover. Recent ion mass-spectrometer measurements of negative ion composition suggest possible importance of ion nucleation sulphuric acid droplets. It is suggested that the sulfurous material injection from the volcanic eruption of Nevado Del Ruiz can explain the observed stratospheric conductivity reduction.